A 17-year-old boy with a pain and swelling of the right lower leg for the past 6 weeks was referred to our hospital. Magnetic resonance imaging showed a tumor in the proximal tibia accompanied with periosteal destruction and soft tissue invasion (Fig. 1A). A biopsy specimen of the tumor revealed a conventional osteosarcoma with neoplastic bone, osteoid and cartilage formation (Fig. 2; note that a color version of this figure is available as supplementary data at http://www.jjco.oxfordjournals.org). The patient received two cycles of neoadjuvant chemotherapy using cisplatin, adriamycin and high-dose methotrexate. After chemotherapy, the size of the tumor shrunk dramatically (Fig. 1B) and serum alkaline phosphatase level decreased from 405 to 198 U/l. By virtue of the effective neoadjuvant chemotherapy, the patient had a chance of limb salvage. An en bloc, curative resection of the tumor, sacrificing both the peroneal nerve and the anterior tibial artery was performed. The knee joint was replaced by the prosthesis with repair of the extensor mechanism and the medial gastrocnemius rotation flap (Fig. 3; A, after resection; B, after joint replacement; C, after rotation flap; note that a color version of this figure is available as supplementary data at http://www.jjco.oxfordjournals.org). The histopathological examination of the resected specimen showed less than 10% of viable tumor cells due to neoadjuvant chemotherapy. After four cycles of adjuvant chemotherapy, the patient is alive free of disease, and he can walk independently with the motion range of more than 90°.

Kazuya Oshima and Akira Kawai
Orthopaedic Surgery Division
National Cancer Center Hospital
Tokyo, Japan
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